

100
FIG. 1A

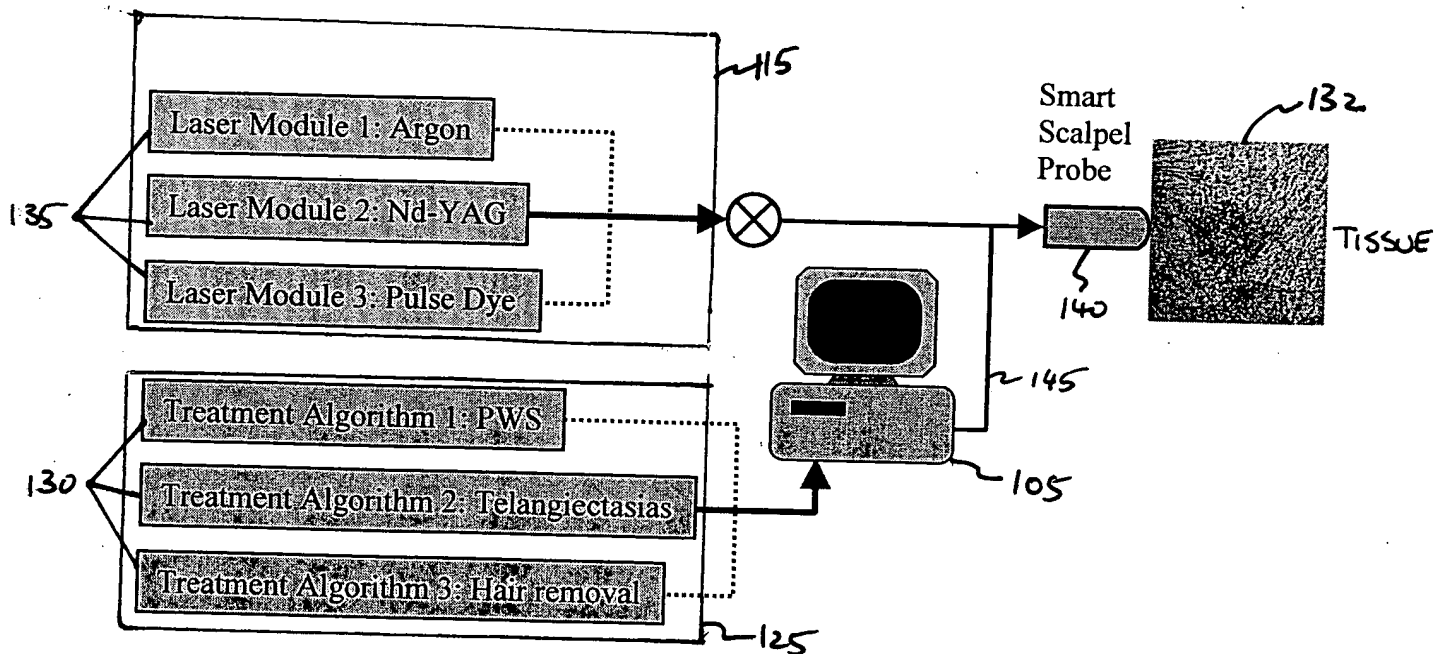


FIG. 1B

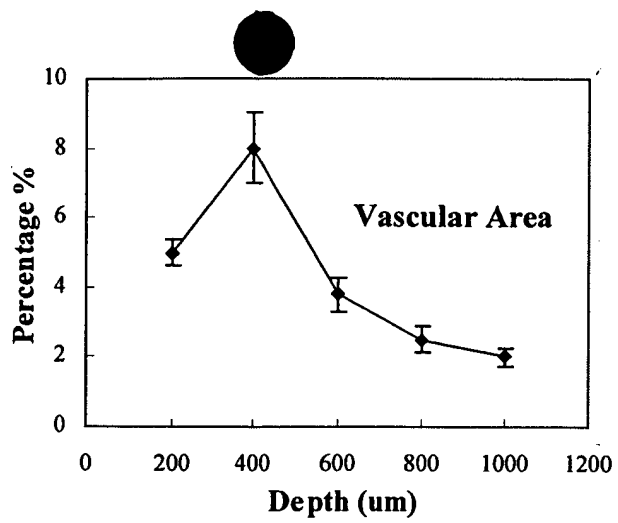


FIG. 3A

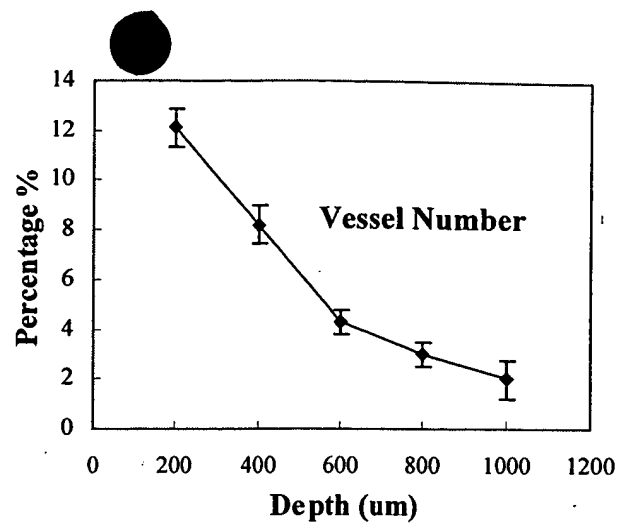


FIG. 3B

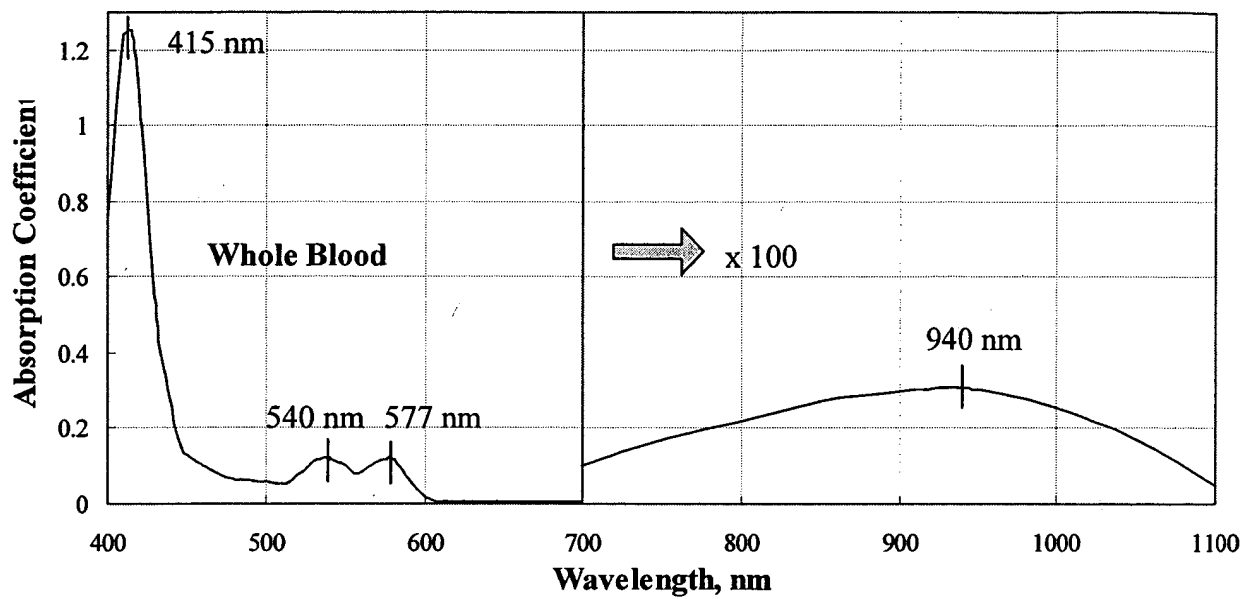


FIG. 4

| Laser | Wavelength (nm) | Treat Fluence (J/cm²) | Type |
|------------------------------------|------------------------|---|-------------|
| Argon | 488, 514 | 1-10 | CW |
| Classic KTP | 532 | 10-40 | CW |
| Cu or Cu-Br | 512-578 | 1-10 | CW |
| Krypton | 570 | 1-10 | CW |
| Pulse dye (yellow) | 585 | 4-8 | Pulsed |
| Derm-KTP | 532 | 2-20 | Pulsed |
| Pulsed dye (green) | 510 | 3-5 | Pulsed |
| Q-sw. Nd:YAG – green - infrared | 532 1064 | 3-5 4-10 | Pulsed |
| Q-sw. Ruby (red) | 694 | 4-10 | Pulsed |
| Q-sw. Alexandrite (infrared) | 755 | 4-10 | Pulsed |

FIG. 5

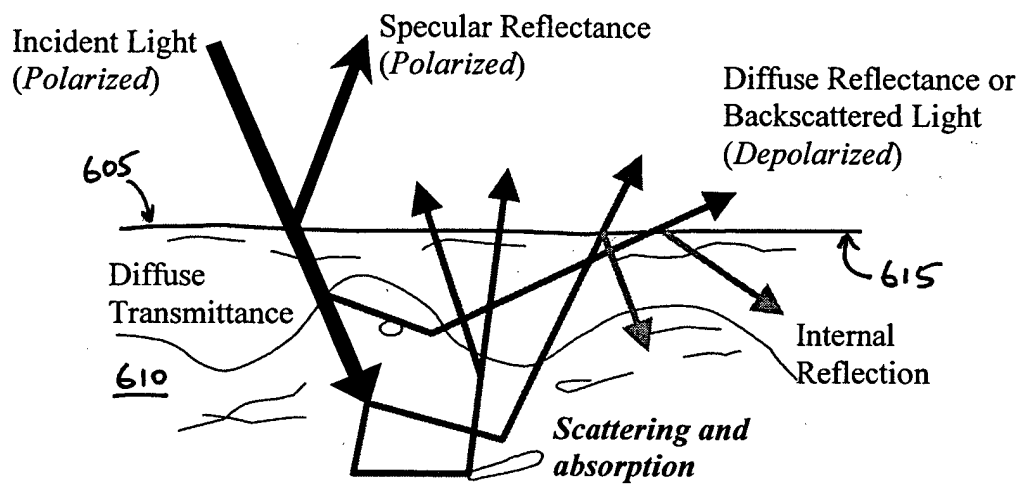


FIG. 6

| Tissue | λ (nm) | μ_a (mm ⁻¹) | μ_s (mm ⁻¹) | G | μ_s' (mm ⁻¹) | μ_t (mm ⁻¹) |
|--------------|----------------|-----------------------------|-----------------------------|------|------------------------------|-----------------------------|
| Human dermis | 633 | 0.27 | 18.7 | 0.81 | 3.553 | 3.823 |

FIG. 7

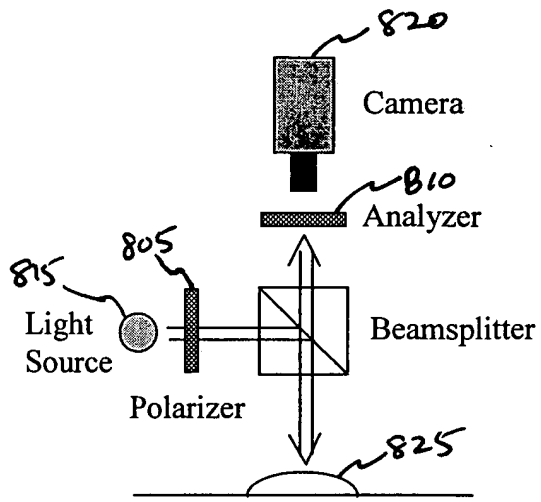


FIG. 8A

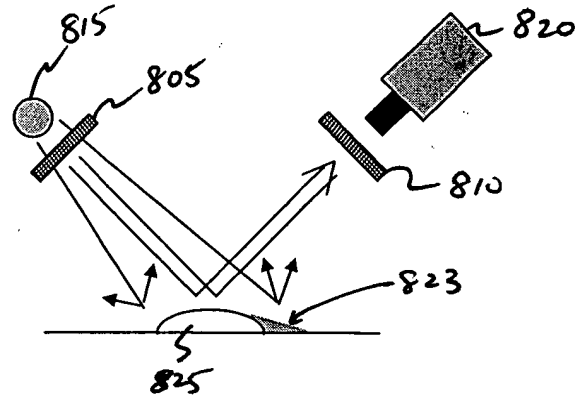


FIG. 8B

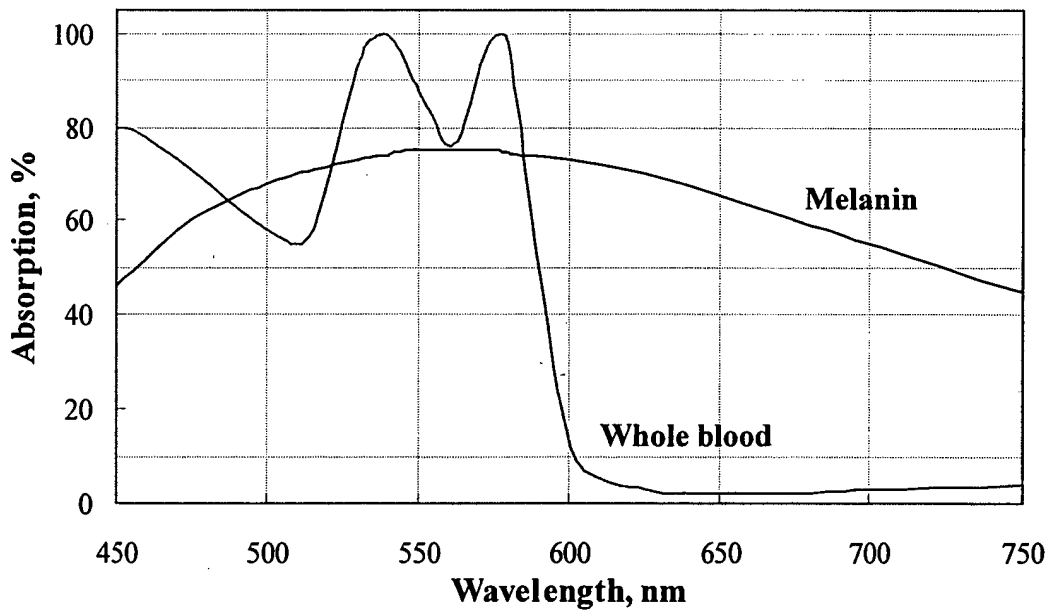
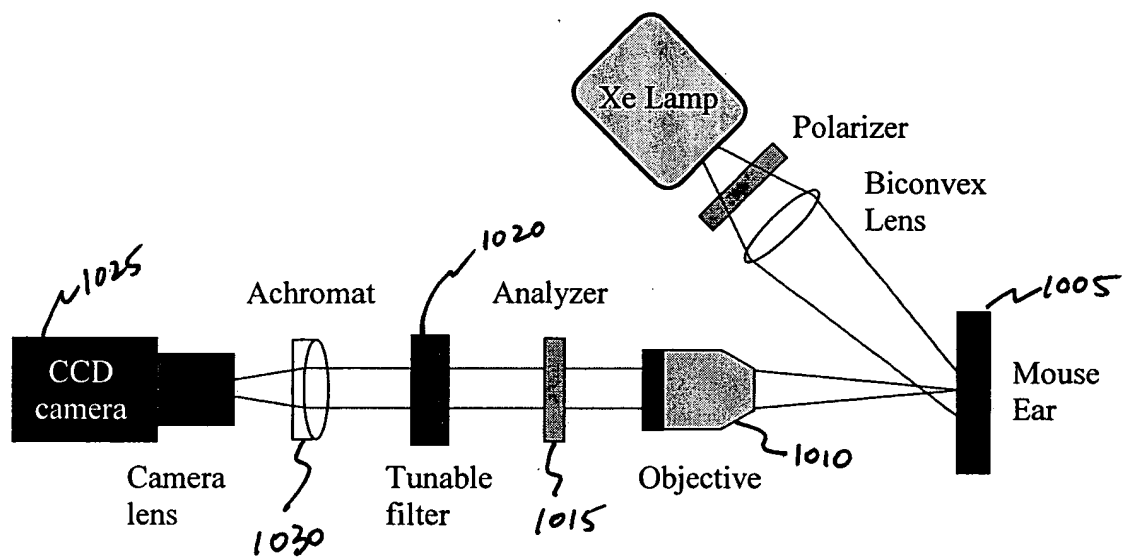


FIG. 9



1000
FIG. 10

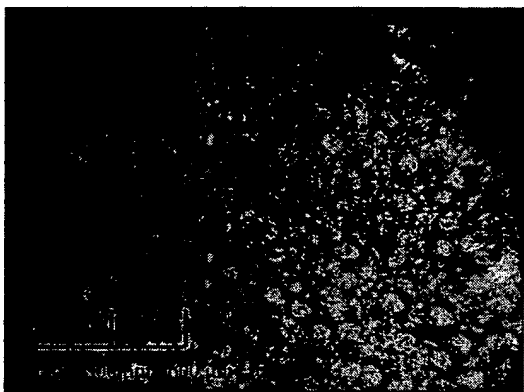


FIG. 11A

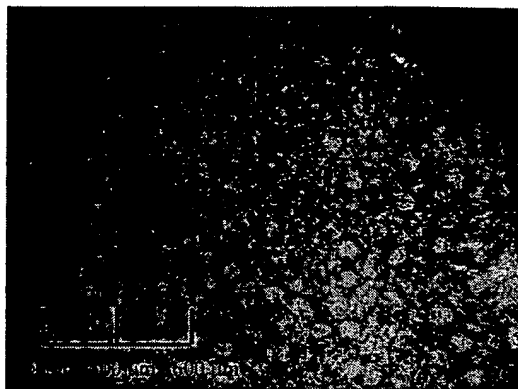


FIG. 11B

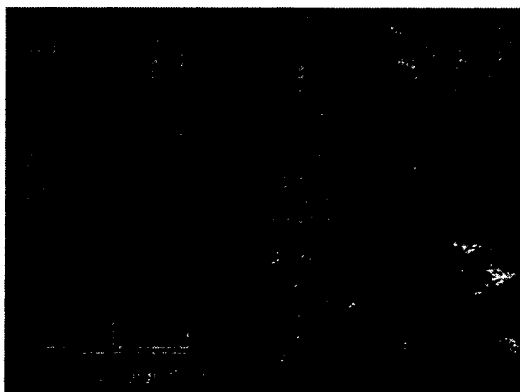


FIG. 11C

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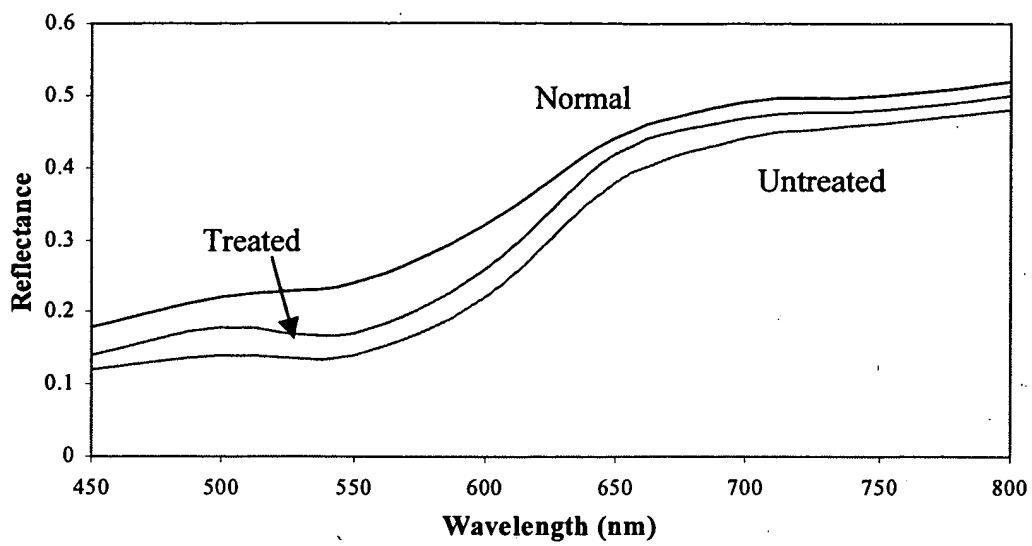
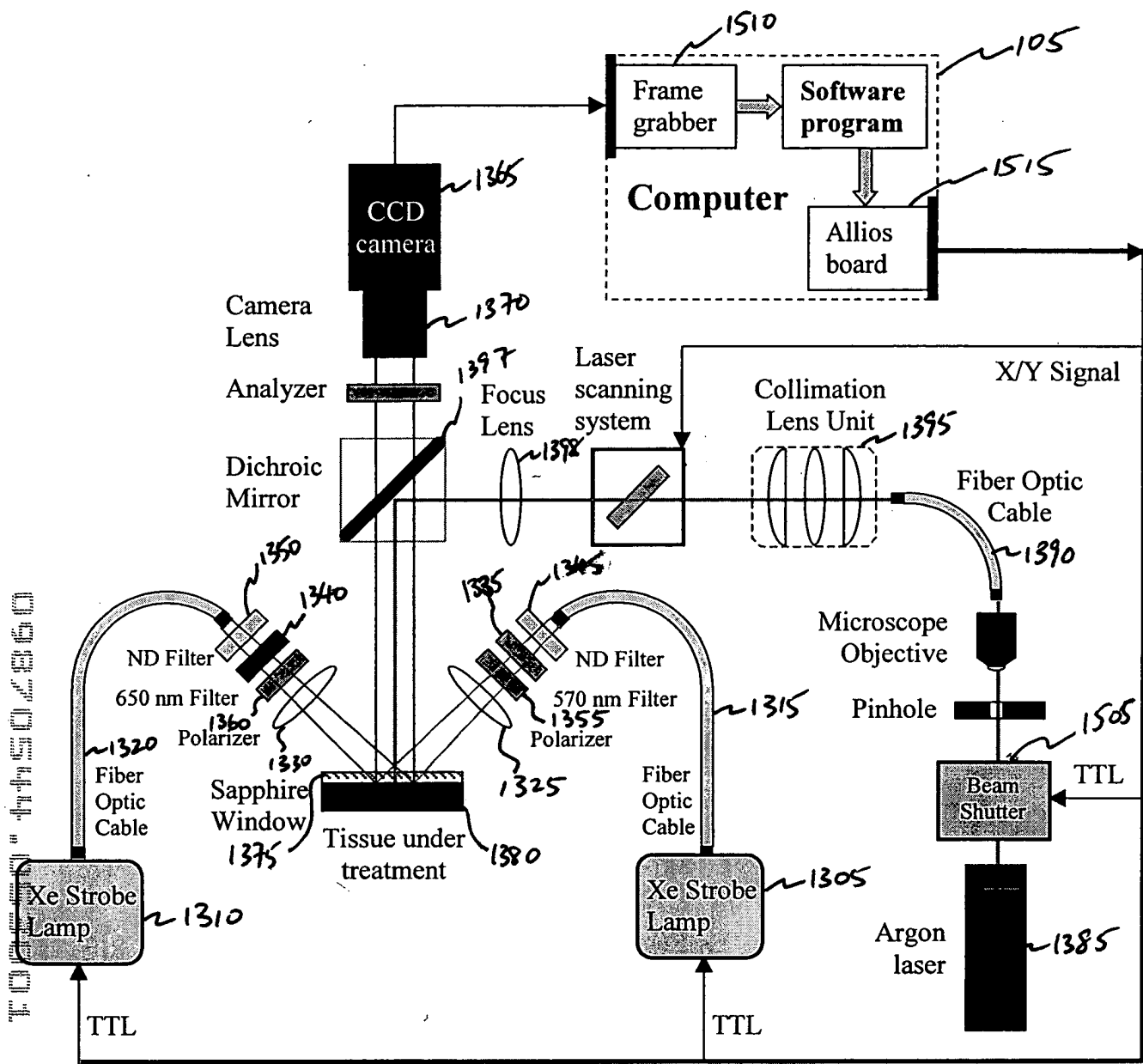


FIG. 12



1300
FIG. 13

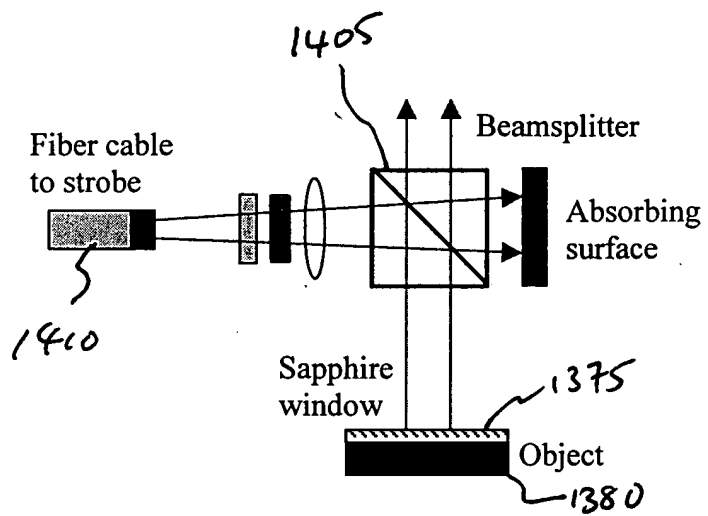


FIG. 14

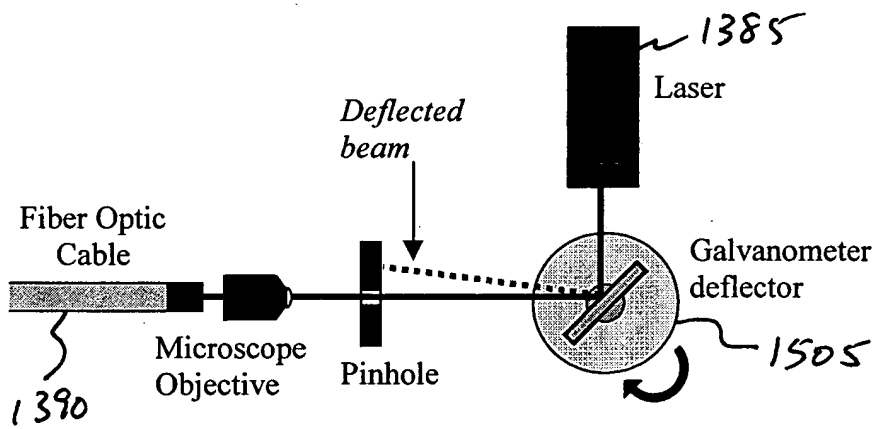


FIG. 15

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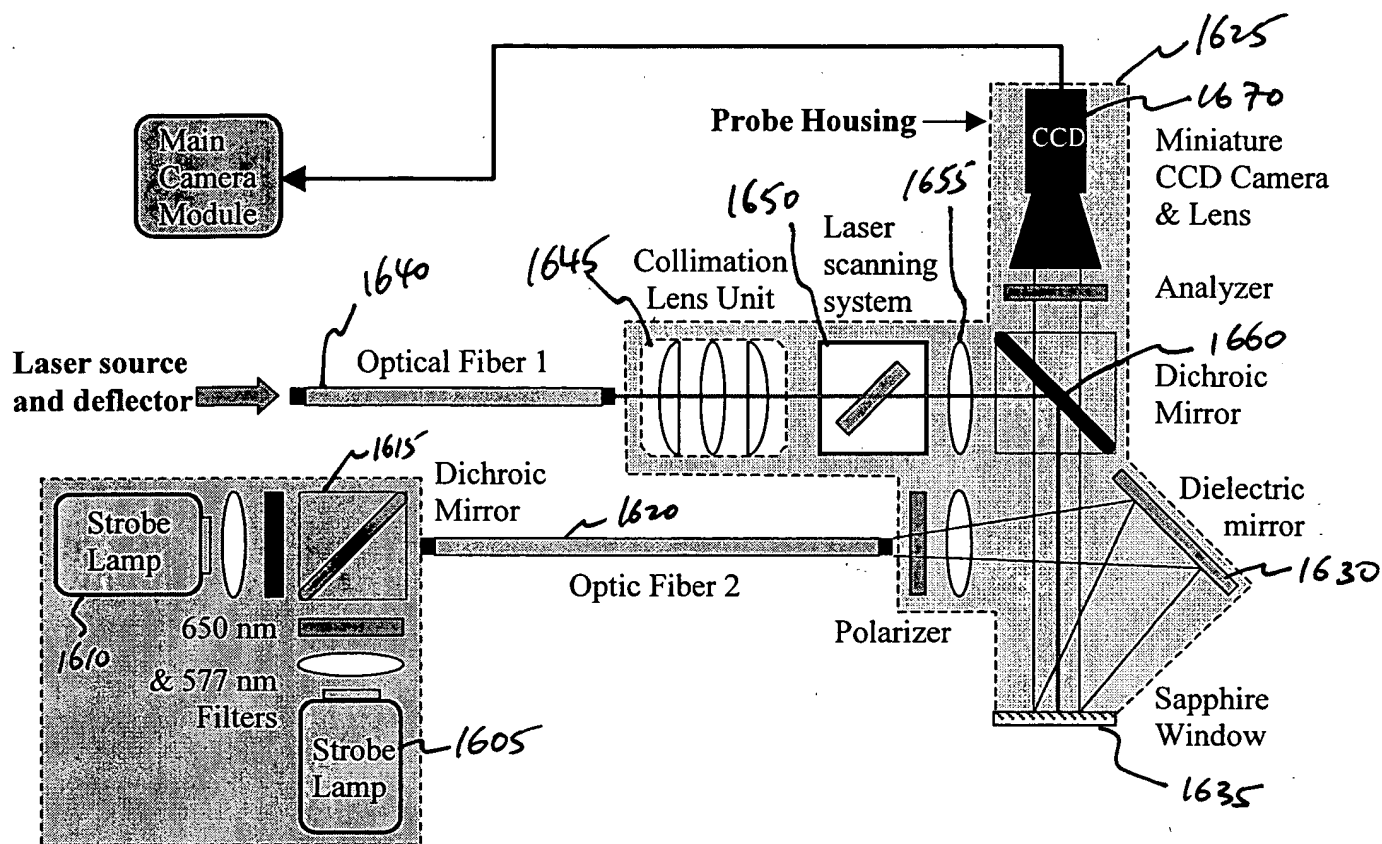


FIG. 16

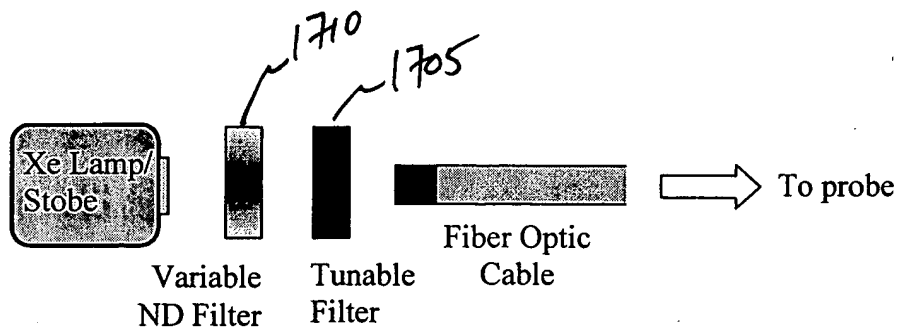


FIG. 17

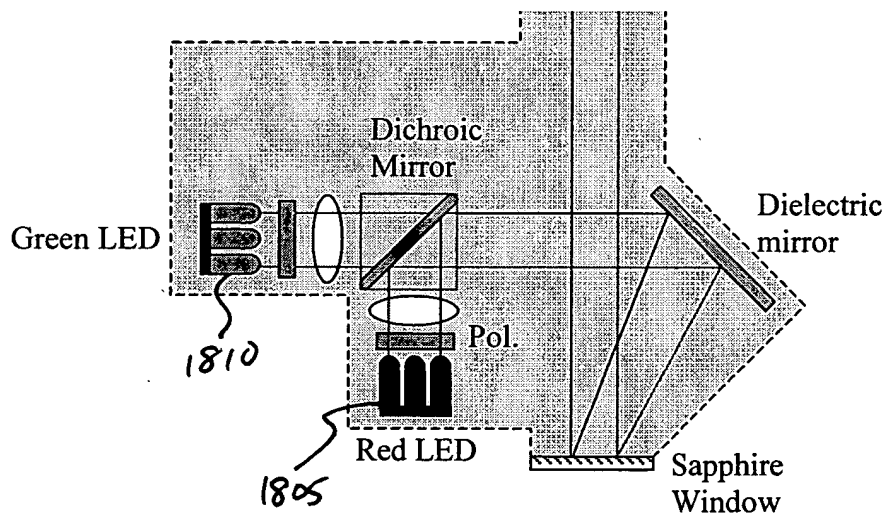


FIG. 18

Parabolic Line Profile

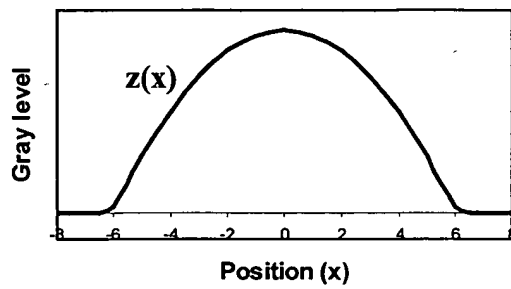


FIG. 19A

First Derivative Profile

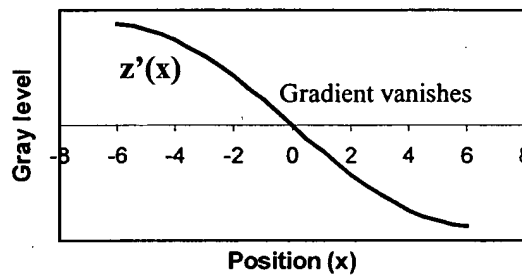


FIG. 19B

Second Derivative Profile

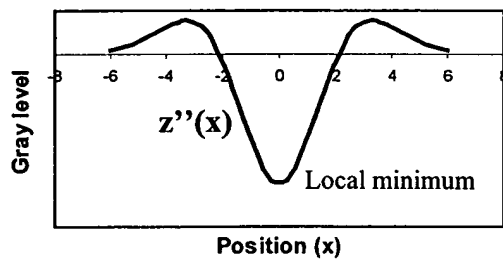


FIG. 19C

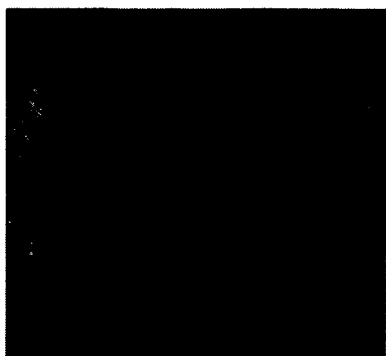


FIG. 20A



FIG. 20B



FIG. 20C

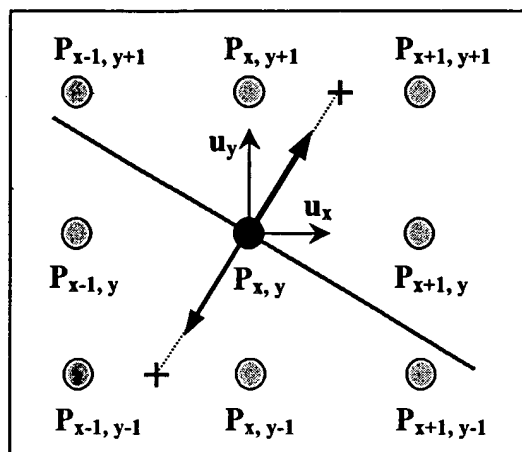


FIG. 21







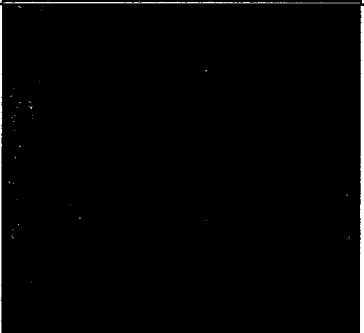

| Characteristic of Noise Added | Noise added image | Result of algorithm |
|---------------------------------------|---|---|
| No noise added |  |  |
| $\mu = 0.0$ $\sigma = 0.00008$ |  |  |
| $\mu = 0.0$ $\sigma = 0.0002$ |  |  |
| Histogram rescaled to reduce contrast |  |  |

FIG. 22

| No. | Process | Time (sec) |
|-----|---|------------|
| 1. | Direct Convolution: $\sigma = 3.0$ | 3.9 |
| 2a. | Recursive Filtering: $\sigma = 3.0$ <i>4th order IIR filter</i> | 3.3 |
| 2b. | <i>3rd order IIR filter</i> | 3.0 |

FIG. 23

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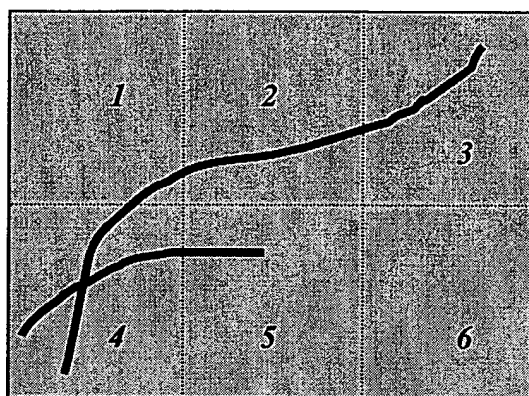


FIG. 24A

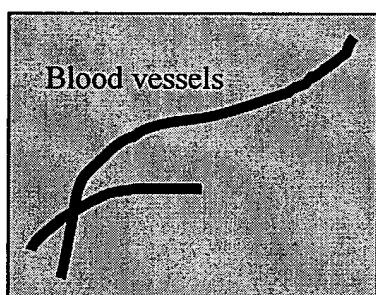


FIG. 24B

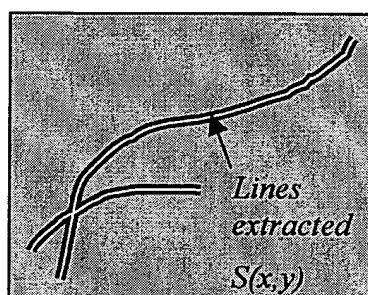


FIG. 24C

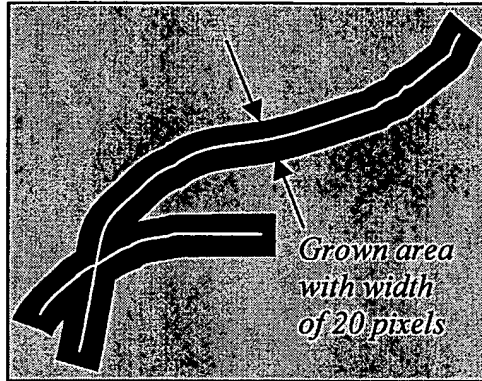


FIG. 24D

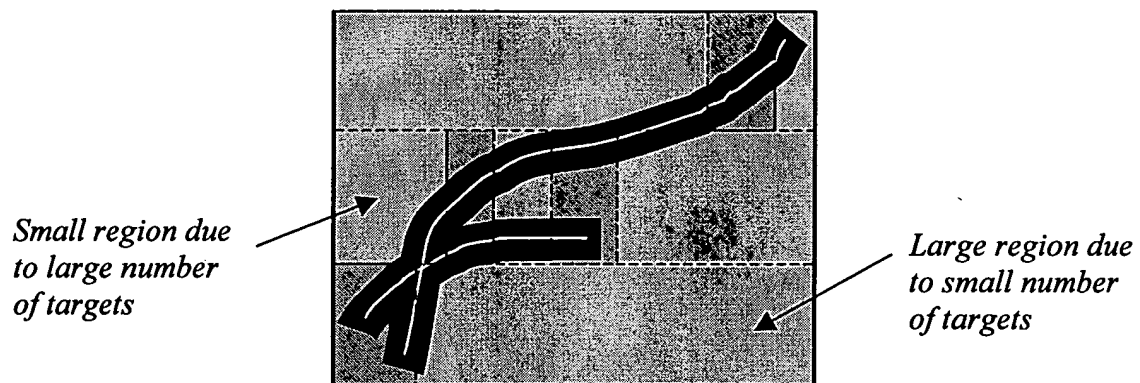


FIG. 24E

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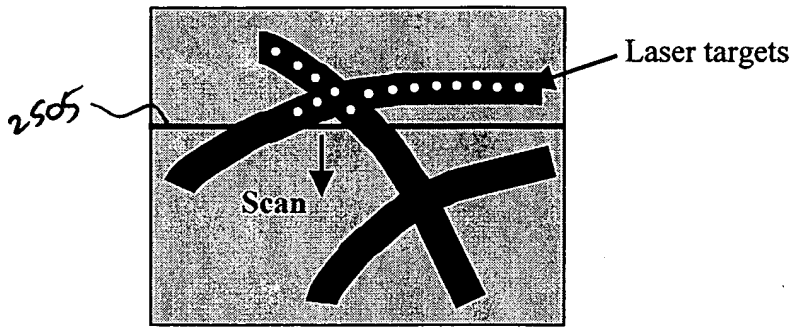


FIG. 25A

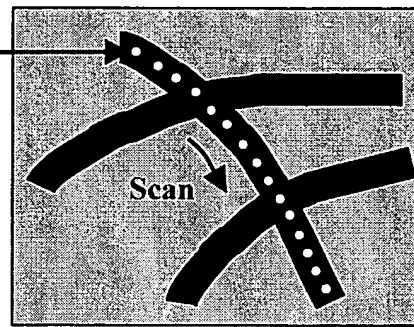


FIG. 25B

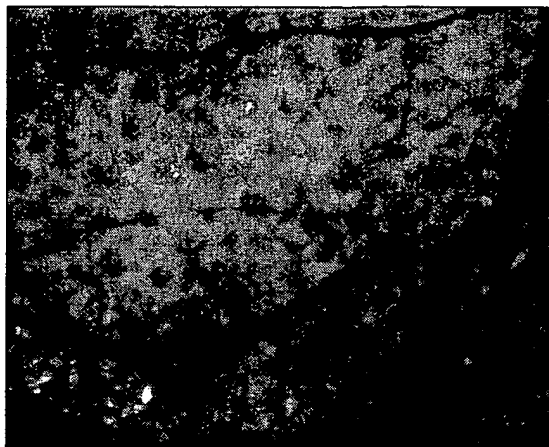


FIG. 26A

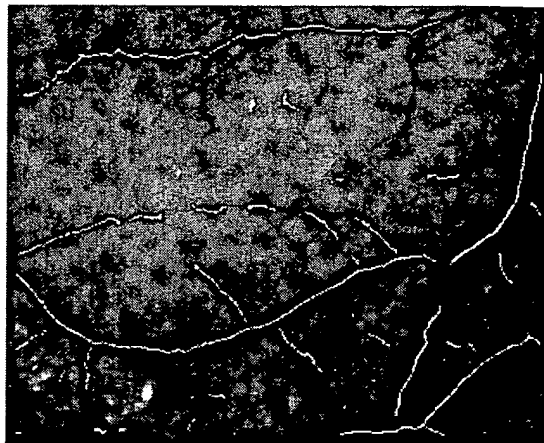


FIG. 26B

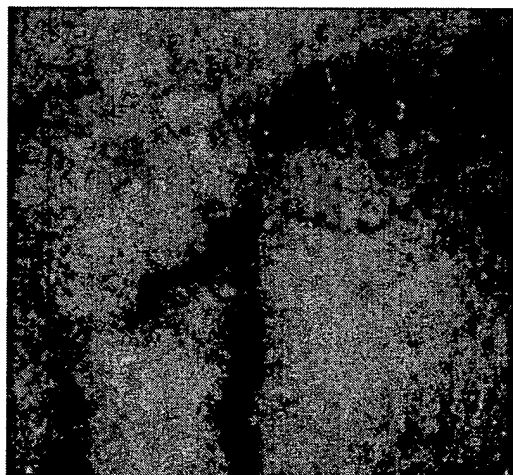


FIG. 27A

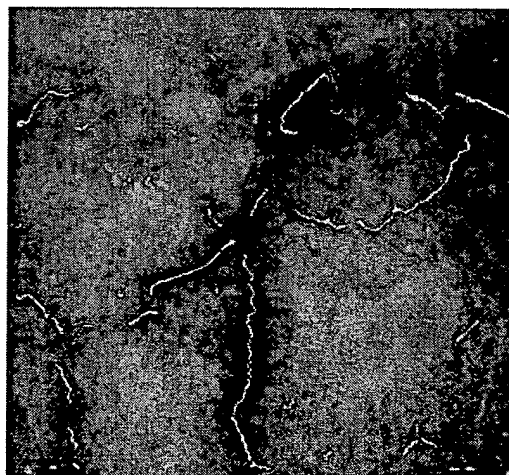


FIG. 27B

0970544-11504360

| | |
|---------------|--------------------------------------|
| Laser | Coherent Innova 100 CW Argon Laser |
| Wavelength | 514 nm |
| Beam diameter | 750 μm |
| Power | 1 watt |
| Pulse width | 80 ms (CW laser pulsed mechanically) |
| Fluence | $18.1 \times 10^4 \text{ J/m}^2$ |

Treatment laser parameters

FIG. 28

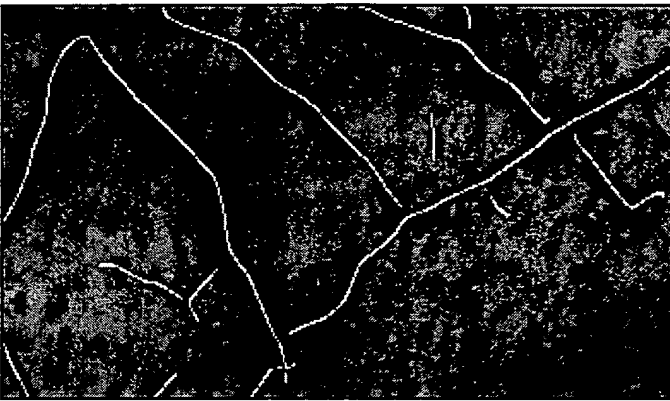
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T00E50" 4750/2860

09870544-053001



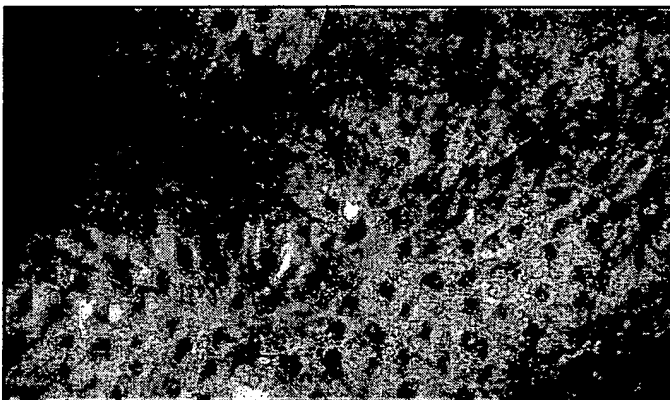
*Blood vessels before treatment
(illumination at 577 nm).*

FIG. 29A



*Targets identified by the Smart
Scalpel.*

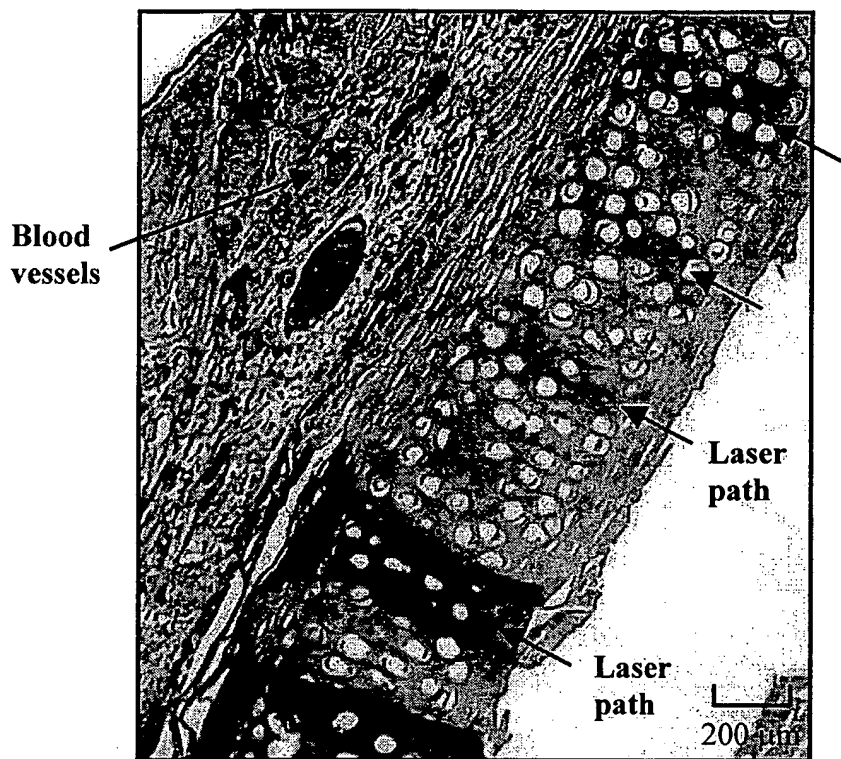
FIG. 29B



*Blood vessels immediately after
treatment.*

FIG. 29C

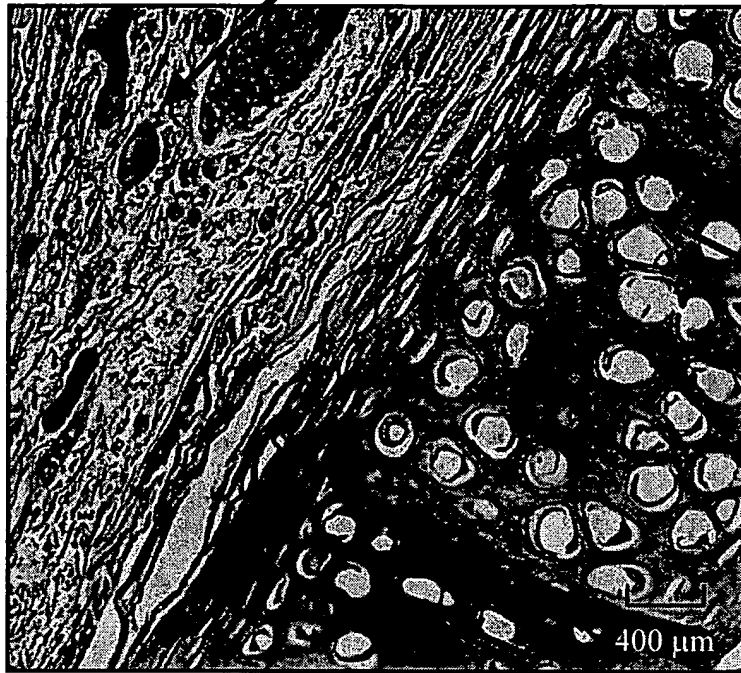
FOI 50-44502360



Histology results

FIG. 30

Blood
Coagulation



Laser
path

Close-up view showing coagulated blood vessels

FIG. 31

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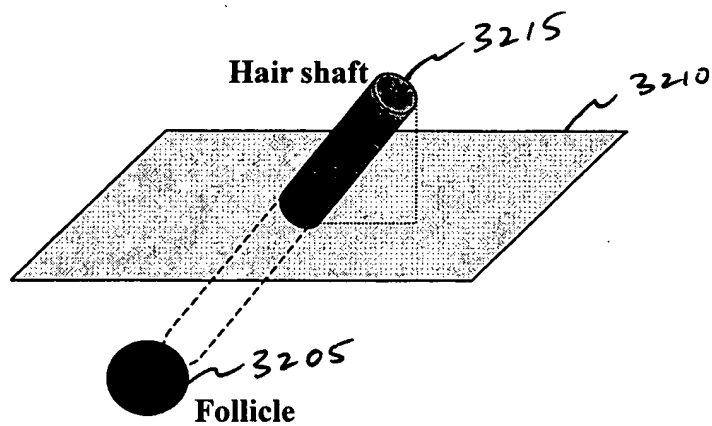


FIG. 32A

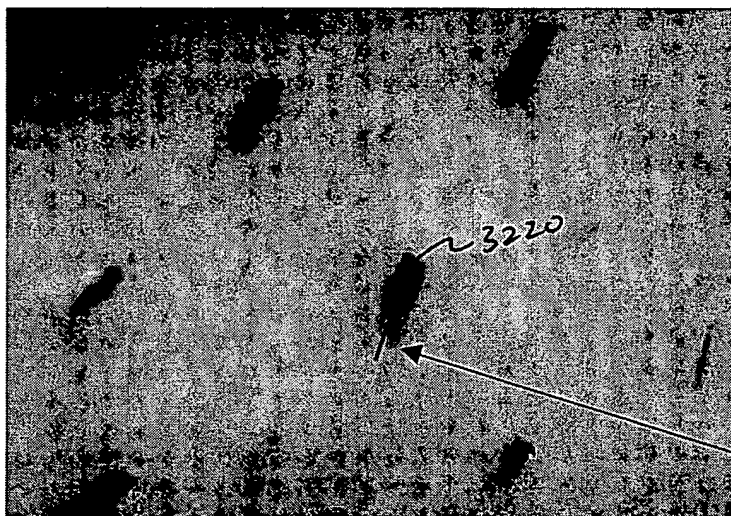


FIG. 32B

Hair follicle
beneath the skin
can lie anywhere
along this red line.

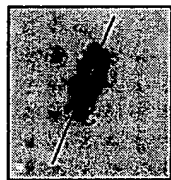


FIG. 32C

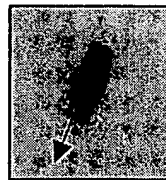
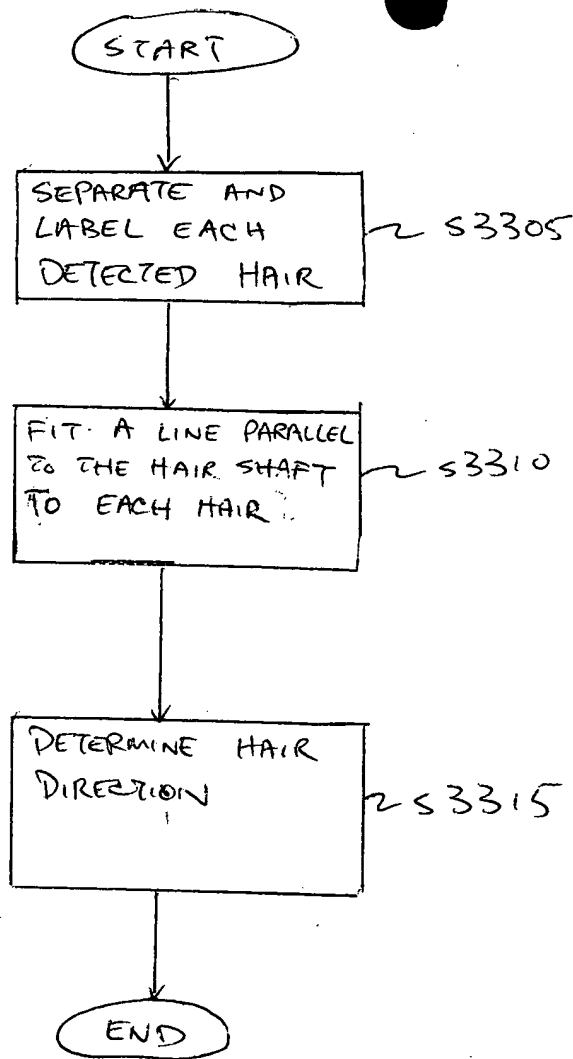


FIG. 32D

FOUO-44502860



3300

FIG. 33